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FURTHER NOTES ON CHANGES IN A SALT MARSH DURING RECLAMATION

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Ten years have passed since I published a paper on floral changes in a salt marsh during reclamation.[1] At that time I had opportunity for a long investigation. Since then I have visited the area at intervals and recorded my observations.

The locality is on the banks of Charles River in Cambridge, Massachusetts, a few miles above its mouth, and was formerly subjected to tidal action, but, since the building of a dam near the mouth of the river in 1908, the water has been practically fresh, and there has been no flooding. The character of the marsh is practically the same as it was in 1915. A rough road, used rarely by horseback riders, runs along the west border. The marsh will soon be made over into a city park and its entire character will be changed for the first time. It will have no interest for the botanist, and this is my apology for adding a little to my former paper.

As I have wandered over the marsh at intervals, I have noticed the disappearance of almost all traces of the saline plants that at one time were abundant, while the upland plants increase and take their places. I can now record only three of the saline species that were still lingering in 1915. *Atriplex patula* L., var. *hastata* (L.) Gray, which was scattered over the marsh in 1915, seems to have been reduced to a single patch in the center of the marsh, where I saw it on October 23, 1924. *Suaeda linearis* (Ell.) Moq. was still lingering on the west side, where a few patches were seen on October 16, 1923. *Solidago sempervirens* L. still persists here and there over the marsh, as I saw scattered plants on September 22, 1923.

I have noticed but one salt marsh species not recorded before. On

[1] RHODORA, Vol. 17, no. 203, November, 1915, 205–222.

September 22, 1923, I found a single plant of *Suaeda maritima* (L.) Dumont, fleshy and prostrate, with up-curving branches. Prof. M. L. Fernald tells me that this is distorted, but must be of this species. On October 23, 1924, I found near the same spot a cluster of the same species. The plants were distorted, but not prostrate.

As is quite natural, upland species continue to occupy the area and increase in number. One and the only instance, however, of the appearance of salt in a single locality I have observed recently. My notebook records the following fact. "May 10, 1925. There is an area of land at the north end of the marsh, some 20 or 30 feet long by five or six feet wide, where there are deposits of clear, white salt, very thinly covering the soil. The taste is very strong. The surface of the ground is free from vegetation." The salt soon disappeared and I did not see it again.

I will append a list of the upland species that have invaded the area of the marsh since 1915.

FLORA OF THE MARSH.

Andropogon scoparius Michx., var. *frequens* Hubbard. Abundant on the west side near the roadway, October 16, 1923.

Glyceria obtusa (Muhl.) Trin. Abundant in a ditch in the east center, September 22, 1923.

Bromus tectorum L. A small clump of six specimens on the western side, near the center, June 1, 1924.

Carex canescens L. One clump on the river bank at the eastern extremity, May 27, 1922.

Juncus canadensis J. Gay. Several plants at the northern end, October 23, 1924.

Smilax rotundifolia L. Abundant on the western border, October 16, 1923.

Iris versicolor L. A cluster of a dozen or so leaves on the border of wet ground at the northwestern end, October 23, 1924.

Salix fragilis L. Shrub at the north end on the border, in leaf, October 23, 1924 and May 13, 1925.

Populus nigra L., var. *italica* Du Roi. A single small tree on the west side of the marsh, on October 13, 1918, and a single tree on the river bank, on May 3, 1923.

Populus candicans Ait. A single small tree at the north end, on October 23, 1924.

Myrica carolinensis Mill. Abundant on the west border in good fruit. I collected it there on October 16, 1923.

Alnus incana (L.) Moench. Three shrubs about 15 feet high with leaves and old fruit, on the outer edge of the marsh by the river, May 2, 1922. A portion of the marsh had been recently burned over.

Lepidium apetalum Willd. A single plant on the west border of the marsh, October 13, 1918.

Pyrus Malus L. A very small tree on the northern border of the marsh, May 7, 1922.

Potentilla canadensis L. Northwest corner of the marsh, June 1, 1924.

Rubus idaeus L. Abundant on the border of the marsh on the western side; no fruit. October 16, 1923.

Rubus hispidus L. Running over the grass on the western border, May 30, 1921, May 27, 1922. Two large patches, each some twenty feet in diameter, densely covering the ground on the nothern end of the marsh, October 23, 1924.

Rosa palustris Marsh. (*R. carolina* of Gray's Manual). Abundant in fruit on the west edge of the marsh, October 14 and 16, 1923 (Rydberg, Bull. Torr. Bot. Club xlvii, 50–51, 1920).

Robinia Pseudo-Acacia L. Several small trees at the northern end of the marsh, May 27, 1922 and October 23, 1924.

Callitriche heterophylla L. Stigma longer than the fruit and erect. In one of the old ditches intersecting the marsh, near the southern end, June 1, 1924.

Rhus glabra L. Large shrub, west border of marsh, October 13, 1918; and abundant at the north end, September 23, 1923. Shrubs in leaf only.

Acer saccharinum L. A small tree close to the border of the marsh at the north end, May 13, 1925.

Cephalanthus occidentalis L. A few plants growing in the water close to the shore of the river in a bay at the south end, September 22, 1923.

Lonicera Morrowi Gray. Two or three shrubs very near the edge of the marsh at the northern end, May 8 and 13, 1925.

Lonicera tatarica L. Sandy slope close to the marsh on the west side, May 7, 1921.

Symphoricarpos racemosus Michx., var. *laevigatus* Fernald. A vigor-

ous shrub in full fruit at the northern end of the marsh, October 4, 1922.

Boltonia asteroides (L.) L'Hér. A cluster of plants on the northern edge of the marsh, September 22, 1923.

Aster novae-angliae L. Several plants in the northern portion, October 4, 1922; abundant there, September 22, 1923.

Aster novae-angliae L., var. *roseus* (Desf.) DC. Several plants in the northern portion, October 4, 1922; abundant there, September 22, 1923.

Aster multiflorus Ait. One plant in the center of the marsh, September 22, 1923. Some large plants at the north end, near the margin, October 23, 1924.

Aster puniceus L. A single specimen in the center of the marsh, September 22, 1923.

Arctium minus Bernh. Common in the northwestern portion of the marsh, October 16, 1923.

Total number of species and varieties observed on the marsh since 1915 and not observed before.....39
Plants affecting saline habitats.....1
Upland plants which have appeared since 1915.....38

As the plants of saline habitats have been reduced almost to zero, it is interesting to note that it has taken a period of 17 years to bring about this change.

The plants enumerated above are in my herbarium. In the verification of some forms I have been assisted by Prof. M. L. Fernald and Mr. C. A. Weatherby, while in the collection of specimens I have been materially aided by Miss L. M. Brown.

CAMBRIDGE, MASSACHUSETTS.

ZINNIA VS. CRASSINA.

S. F. BLAKE.

THE familiar garden plants popularly known as zinnia had borne the same botanical name unchallenged for a century and a quarter when, in 1891, Otto Kuntze[1] displaced *Zinnia* L. (1759) by *Crassina* Scepin (1758) on the ground of priority. The change was adopted by Porter and Britton (1894) and other writers in America, and for thirty years

[1] Rev. Gen. Pl. **1:** 331. 1891.